

MECHANIZED STICKS HOLDER

Field of the Invention

This invention relates to improved methods and apparatus concerning chopsticks holders.

Background of the Invention

Various devices are known for holding two sticks together in a chopsticks type arrangement. U.S. patent no. 6,454,328 to Barillos and U.S. patent no. 5,697,659 to Calagui show examples of devices of this type.

Summary of the Invention

The present invention in one or more embodiment provides an apparatus comprising a first device which includes a first stick having a first tip, a second device which includes a second stick having a second tip, and a third device which includes a first hollow tube in which a spring is located. The first device may be connected to the third device so that the first stick can pivot with respect to the third device. The second device may be connected to the third device so that the second stick can pivot with respect to the third device. In a rest state, the spring causes the first stick to be separated from the second stick so that the first tip and the second tip do not contact each other. The first stick and the second stick can be pressed together into a compressed state, so that the first stick pivots with respect to the third device, the second stick pivots with respect to the third device, the spring is compressed by the first and second devices, and the first tip and the second tip come into contact with each other.

The third device may include a block portion, which is fixed to the first hollow tube. The

first device may include a second hollow tube connected to a first extension. The first stick can be inserted into the second hollow tube. The first extension can be inserted into a first slot of the block portion. The second device may include a third hollow tube connected to a second extension. The second stick can be inserted into the third hollow tube. The second extension can be inserted into a second slot of the block portion. The block portion may include a first opening through which a first pin can be inserted to connect the first device to the third device and to allow the first device to pivot with respect to the third device. The block portion may include a second opening through which a second pin can be inserted to connect the second device to the third device and to allow the second device to pivot with respect to the third device.

The first device may include a first fastener. The first stick can be inserted into the second hollow tube and attached to the second hollow tube by the first fastener. The second device may include a second fastener. The second stick can be inserted into the third hollow tube and attached to the third hollow tube by the second fastener.

Brief Description of the Drawings

Fig. 1 shows a perspective view of an apparatus in accordance with an embodiment of the present invention;

Fig. 2 shows a perspective view of the apparatus of Fig. 1 taken apart;

Fig. 3 shows a perspective view of a part of the apparatus of Fig. 1;

Fig. 4 shows a perspective view of a container for holding portions of the apparatus of Fig. 1;

Fig. 5 shows a bottom view of a lid for the container of Fig. 4;

Fig. 6A shows a perspective view of an apparatus in accordance with another embodiment of the present invention;

Fig. 6B shows the alignment of two ends of the apparatus of Fig. 6A;

Fig. 6C shows the misalignment of first and second tips of the apparatus of Fig. 6A;

Fig. 6D shows the alignment of first and second tips of the apparatus of Fig. 6A;

Fig. 7A shows a cross sectional view of part of the apparatus of Fig. 1 in a first state; and

Fig. 7B shows a cross sectional view of part of the apparatus of Fig. 1 in a second state.

Detailed Description of the Drawings

Fig. 1 shows a perspective view of an apparatus 10 in accordance with an embodiment of the present invention. Fig. 2 shows a perspective view of the apparatus 10 of Fig. 1 taken apart. The apparatus 10 includes devices 20, 30, and 40. Referring to Fig. 2, device 20 includes an elongated member or stick 22, which is comprised of portions 22a and 22c. The portions 22a and 22c are joined at end or junction 22d. The portion 22a may be a solid member or tube, which has a diameter which gradually decreases from a thickest part at junction 22d to a thinnest part at a tip or end 22b. The portion 22c may be a hollow tube having a uniform diameter and having inner threads. The portion 22c may have an end 22e at which there is an opening.

The device 20 also includes a portion 24. Portion 24 may include a hollow tube 24a having openings at ends 24e and 24d. Portion 24 may also include an extension or protrusion 24b which is fixed to the outside of hollow tube 24a. The extension 24b may include an opening 24c. The device 20 also includes a device 26. The device 26 may include a cap or handle portion 26a fixed to a screw 26b. The screw 26b has outer threads.

The device 40 may be identical to the device 20. However, the components of device 40 have been given different numbers for explanation purposes. Device 40 includes an elongated member or stick 42, which is comprised of portions 42a and 42c. The portions 42a and 42c are joined at end or junction 42d. The portion 42a may be a solid member or tapered tube, which has

a diameter which gradually decreases from a thickest part at junction 42d to a thinnest part at a tip or end 42b. The portion 42c may be a hollow tube having a uniform diameter and having inner threads. The portion 42c may have an end 42e at which there is an opening. The device 40 also includes a portion 44. Portion 44 may include a hollow tube 44a having openings at ends 44e and 44d. Portion 44 may also include an extension or protrusion 44b which is fixed to the outside of hollow tube 44a. The extension 44b may include an opening 44c. The device 40 also includes a device 46. The device 46 may include a cap or handle portion 46a fixed to a screw 46b. The screw 46b has outer threads.

Device 30 is shown in the middle of devices 20 and 40. Device 30 includes a block portion 32 fixed to a tube portion 34. The device 30 also includes a pin 31, a pin 33, a member 35, a member 37, and a spring 39. Fig. 2 shows a top perspective view of the device 30. Fig. 3 shows a bottom perspective view of a portion of the device 30. The block portion 32 includes a slot or opening 32b, shown in Fig. 2, and a slot or opening 32g, shown in Fig. 3. The sizes of the slots or openings 32b and 32g are shown by dashed lines in Fig. 3. The block portion 32 includes curved or recessed portions 32e and 32f near slot 32b, shown in Fig. 2, and curved or recessed portions 32h and 32i near slot 32g, shown in Fig. 3. The block portion has openings 32c and 32d. The tube portion 34 is a hollow tube having openings 34b and 34a.

The apparatus 10 can be assembled from the taken apart depiction shown in Fig. 2 to the depiction shown in Fig. 1, in the following manner. The device 20 can be assembled as follows. The end 22e of the member or stick 22 can be inserted into the opening 24e of the tube 24a of the portion 24. The screw 26b can be inserted into the opening 24d of the tube 24a. The end or opening 24d may have internal threads, so that the screw 26b can be screwed into the internal threads of end or opening 24d. The end or opening 24d may also have a stopper, which prevents the end 22e of the stick 22 from going all the way through the tube 24a. The screw 26b can be

screwed into the internal threads of the end or opening 22e of the portion 22c.

The device 40 can be assembled in the same manner as the device 20. The end 42e of the member or stick 42 can be inserted into the opening 44e of the tube 44a of the portion 44. The screw 46b can be inserted into the opening 44d of the tube 44a. The end or opening 44d may have internal threads, so that the screw 46b can be screwed into the internal threads of end or opening 44d. The end or opening 44d may also have a stopper, which prevents the end 42e of the stick 42 from going all the way through the tube 44a. The screw 46b can be screwed into the internal threads of the end or opening 42e of the portion 42c.

The spring 39 is inserted into the tube 34 so that an end 39a of the spring 39 lies just outside of or near the opening 34a and an end 39b of the spring 39 lies just outside of or near the opening 34b. A portion 35b of the member 35 can be inserted into end 39a of the spring 39. A portion 35a is thicker than the portion 35b and the portion 35a will lie outside of the spring 39. A portion 37b of the member 37 can be inserted into the end 39b of the spring 39. A portion 37a is thicker than the portion 37b and the portion 37a will lie outside of the spring 39.

The extension 24b can then be inserted into the slot 32b. The opening 24c of the extension 24b is aligned with the opening 32c of the block portion 32. The pin 31 is inserted into the opening 32c and into the opening 24c thereby joining the extension 24b to the block portion 32, and thereby connecting the device 20 to the device 30 in a manner which allows the device 20 to pivot to a limited extent with respect to the device 30.

In a similar manner the extension 44b can then be inserted into the slot 32g. The opening 44c of the extension 44b is aligned with the opening 32d of the block portion 32. The pin 33 is inserted into the opening 32d and into the opening 44c thereby joining the extension 44b to the block portion 32, and thereby connecting the device 40 to the device 30 in a manner which allows the device 40 to pivot to a limited extent with respect to the device 30.

When the apparatus 10 is assembled, the member 35 presses against the tube 24a and the member 37 presses against the tube 44a. This keeps the tips 22b and 42b in a normal state of being apart from one another a certain distance, such as D2, which may be one and a half inches. An individual can flex the members 22a and 42a towards each other to cause the tips 22b and 42b to touch each other, or at least to come close enough together to pick up something, such as a piece of food. When the tips 22b and 42b are forced towards one another, closer than the state of Fig. 1, the tube portion 24a pivots about the pin 31 and presses down on the member 35. At the same time the tube portion 44a pivots about the pin 33 and presses up on the member 37. The member 35 presses down on the spring 39 while the member 37 presses up on the spring 39 causing the spring 39 to compress. When an individual stops applying pressure to devices 20 and 40, the spring 39 causes the tips 22b and 42b to return to their normal distance from each other shown in Fig. 1.

Fig. 4 shows a perspective view of a container 100 for holding portions of the apparatus 10 of Fig. 1. The container 100 may have a lid 102 and a case 114. The case 114 may have an inner chamber 122 and an outer covering or wall 116. The case 114 may have tapered upper edges 118 and 120. The inner chamber 122 may have a length of D1, which may be slightly greater than the length of the tube 44a and the device 46. The inner chamber 122 may be big enough to fit the device 30, the portions 24 and 44, and the devices 26 and 46.

Fig. 5 shows a bottom view of the lid 102 for the container 100 of Fig. 4. The lid 102 includes protrusions 106a and 108a, which are separated by a gap 110a and protrusions 106b and 108b, which are separated by a gap 110b. The protrusions 106a-b, and 108a-b lie in a plane with a relief or surface 104a, which protrudes out from a surface 104b of the lid 102. When pressing the lid 102 to cover the opening to chamber 122 of the case 114 the protrusions 106a and 108a and the protrusions 106b and 108b are compressed together closing the gaps 110a and 110b.

Fig. 6A shows a perspective view of an apparatus 200 in accordance with another embodiment of the present invention. The apparatus 200 is identical with the apparatus 10 of Fig. 1, with the exception that apparatus 200 has a member 222 that curves so that its tip 222b does not lie over the tip 242b. Sometimes, in the manufacturing process, a member, such as member 222 can become warped. This is a problem because it means that, if the apparatus 200 is left in the state shown in Fig. 6A, and the member 222, is compressed towards the member 242, the tips 222b and 242b will not meet. However, in the present invention, the apparatus 200 does not have to be left in the state shown in Fig. 6A. The member 222 can be rotated to place the tip 222b over the tip 242b. In this case, while the member 222 is rotating, a tube portion 224a is kept still in the same position.

Fig. 6B shows the alignment of two ends or devices 226 and 246 of the apparatus 200 of Fig. 6A. The devices 226 and 246 are aligned so that they both lie in a straight-line segment L1. Fig. 6C shows the misalignment of tips 222b and 242b of the apparatus 200 of Fig. 6A. The tips 222b and 242b are misaligned so that the tips 222b and 242b do not lie in a line segment L2, where L2 is parallel to L1. Fig. 6D shows the alignment of tips 222b and 242b, so that the tips 222b and 242b both lie in a line segment L2 which is parallel to L1. In this case, the member 222 may be curved downward after rotation, but the tips 222b and 242b will meet when the members 222 and 242 are compressed towards each other.

Fig. 7A shows a cross sectional view of part of the apparatus 10 of Fig. 1 in a first state. Fig. 7B shows a cross sectional view of part of the apparatus 10 of Fig. 1 in a second state. In the first state shown in Fig. 7A the device 26 is shown with its cap 26a, non threaded portion 26c, and its threaded portion 26b. Also shown in Fig. 7A is the hollow tube 24a, the portion 22c, and the portion 22a. The hollow tube 24a includes a portion 24f having a diameter smaller than the rest of the hollow tube 24a. The threaded portion 26b of the device 26 can be screwed into an internally

threaded bore of the portion 24f until the non threaded portion 26c lies in the bore of the portion 24f, as in Fig. 7A. In the position or state of Fig. 7A, the device 26 can be slid, without screwing or turning the device 26, to the left until the threaded portion 26b contacts the inner threads of the bore of portion 24f. The device 26 can also be slid, without screwing or turning the device 26, to the right until the cap 26a contacts the end 24d of the hollow tube 24a. As shown in Fig. 7A, the portion 22c is inserted into the larger diameter bore of the tube 24a. However, the threaded portion 26b of the device or screw 26, is not yet inserted into the portion 22c.

In the position or state of Fig. 7B, the threaded portion 26b has been screwed a bore of the portion or tube 22c. The portion or tube 22c may have internal threads. The device 26 can be screwed into the portion 22c so that the end 22d contacts the end 24e of the hollow tube 24a, and the cap 26a contacts the end 24d of the hollow tube 24a, as shown in Fig. 7B. However, the end 22e typically does not contact the portion 24f. This allows the portion or stick 22a to be more easily adjusted. Note that L1, shown in Fig. 2, is the length of the portion 22c and L2, shown in Fig. 2 is the distance from end or opening 24e to portion 24f. L1 is typically less than L2 so that the portion 22c will not contact the portion 24f of the tube 24a.

The operation for device 46, tube 44a, and portions 42c and 42a would be identical to the operation described with reference to Figs. 7A and 7B for device 26, tube 24a, and portions 22c and 22a.

Although the invention has been described by reference to particular illustrative embodiments thereof, many changes and modifications of the invention may become apparent to those skilled in the art without departing from the spirit and scope of the invention. It is therefore intended to include within this patent all such changes and modifications as may reasonably and properly be included within the scope of the present invention's contribution to the art.